United States
Environmental Protection Agency

Office of Transportation and Air Quality
National Vehicle and Fuel Emissions Laboratory
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Grabner Vapor Pressure of Petroleum Products Method

This method is written for the Environmental Protection Agency, National Vehicle and Fuel Emissions Laboratory (NVFEL) internal use. The use of specific brand names by NVFEL in this method are for reference only and are not an endorsement of those products. This document may be used for guidance by other laboratories.

NVFEL Reference Number

125A

Implementation Approval

Original Procedure Authorized by EPCN # 317 on 05-02-2003

Revision Description

(1) 06-17-2004 The purpose of this change is to revise the procedure as described in EPCN #384.

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1. Scope

This method covers the determination of the absolute pressure, measured against a vacuum, of a gasoline or gasoline-oxygenate blend sample saturated with air at 32 ^{o}F to 40 ^{o}F. The absolute (measured) pressure is observed with a system volume ratio of 1 part sample and 4 parts evacuated space at 100 ^{o}F. The values stated in pounds per square inch absolute are standard.

2. Summary of Method

A known volume of chilled, air-saturated sample at 32 to 40 ^{o}F, is introduced into an evacuated, thermostatically controlled test chamber, the internal volume of which is five times that of the total test specimen introduced into the chamber.

After injection into the test chamber, the test specimen is allowed to reach thermal equilibrium at the test temperature, 100 ^{o}F. The resulting pressure increase is measured with an absolute pressure-measuring device whose volume is included in the total of the test chamber volume. The measured pressure is the sum of the partial pressures of the sample and the dissolved air.

The total measured vapor pressure is converted to a Reid vapor pressure by use of the correlation equations below:

Certification Test Fuel, ASTM Formula
(RVPE or DVPE) psi = (0.965 * Ptot) ñ 0.548
(D323 equivalent)

California Phase II Fuel, California Air Resource Board (CARB) Formula
(RVPE or DVPE) psi = (0.972 * Ptot) ñ 0.715

Other Fuels, EPA Formula
(RVPE OR DVPE) psi =(0.956*Ptot) ñ 0.347

3. Significance

This method is the Laboratory Operations Division (LOD) specific version of American Society for Testing and Materials (ASTM) D 5191, "Standard Test Method for Vapor Pressure of Petroleum Products" (Mini Method). Vapor pressure is a very important physical property of volatile liquids. Various government agencies regulate the vapor pressure of gasoline and gasoline-oxygenate blends. This is to ensure products of suitable volatility performance. Specifications for volatile petroleum products generally include vapor pressure limits.

4. Applicable Document

4.1 Code of Federal Regulations (CFR) Title 40 part 80.46 (c) which references 40 CFR part 80 appendix E, method 3, Test Method for Determining Reid Vapor Pressure(RVP) of Gasoline and Gasoline-Oxygenated Blends; Method 3-Evacuated Chamber Method.

4.2 ASTM D5191 Standard Test Method for Vapor Pressure of Petroleum Products (Mini Method)

4.3 ASTM D4057 Practice for Manual Sampling of Petroleum and Petroleum Products

4.4 ASTM D2892, (Standard test method for distillation of Crude Petroleum (15-Theoretical Plate Column)).

4.5 "Filemaker Pro Userís Guide"

4.6 "Access Userís Guide"

4.7 Vapor Pressure Tester CCA-VPS Operation Manual, Grabner Operating Manual

4.8 "Mercury Barometer Instruction Manual"

5. Definitions

5.1 Absolute pressure (Pabs)ñ the pressure of the air-free sample. It is calculated from the total pressure of the sample by subtracting out the partial pressure of the dissolved air.

5.2 Total Pressure (Ptot) ñ the observed pressure measured in the experiment that is the sum of the partial pressure of the sample and the partial pressure of the dissolved air.

5.3 Partial Pressure (Pgas) ñ the partial pressure of the dissolved gases determined from the dissolved gas measuring procedure.

6. Interferences and/or Limitations

6.1 Samples and standards must be chilled in an ice-water bath to 32 to 40 F before they are opened and analyzed.

6.2 The platinum resistance thermometer should be calibrated every 6 months.

6.3 The test temperature setting of the Grabner must be 100 ^{o}F.

6.4 Depending on the sample type, the RVP equation must be either

0.956* Ptot ñ 0.347 (EPA Formula)
0.972* Ptot ñ 0.715 (CARB Formula)
0.965* Ptot ñ 0.548 (ASTM Formula)

6.5 Determine vapor pressure as the first test on a sample.

6.6 The time between air saturation and the time between the last air saturation and analysis, must be a minimum of 2 minutes.

7. Safety

7.1 Gasoline, n-pentane, 2,2,4-trimethylpentane, 2,2-dimethylbutane, and 3-methylpentane are flammable and toxic. Specific procedures for handling these materials are listed in their respective Material Safety Data Sheets (MSDS) on file in the "Testing Services Group" (TSG) or the safety office.

7.2 A fuel spill of less than a liter can be mopped up with spill control pillows or absorbent found in the Chemistry Lab. Disposal of these materials must be done through the NVFEL hazardous materials representative. If more than this, leave the area immediately and contact the emergency response team.

8. Apparatus

8.1 Grabner Model CCA-VPS, vapor pressure analyzer. The apparatus shall employ a thermostatically controlled test chamber, which is capable of maintaining a vapor to liquid ratio between 3.95 and 4.05 to 1.00.

8.2 The pressure measurement device shall have a minimum operation range from 0 to15 psia (0 to 103 kPa) with a minimum resolution of 0.05 psia (0.34 kPa). The pressure measurement device shall include any necessary electronic and readout devices to display the resulting reading.

8.3 The test chamber shall be maintained at 100 ^{o}F ±0.2 ^{o}F (37.8 ^{o}C ±0.1 ^{o}C) for the duration of the test except for the time period after sample injection when the sample is coming to equilibrium with a test temperature of 100 ^{o}F ±0.2 ^{o}F (37.8 ^{o}C ±0.1 ^{o}C).

8.4 A platinum resistance thermometer shall be used for measuring the temperature of the test chamber. The minimum resolution for the temperature measurement device is 0.2 ^{o}F (0.1 ^{o}C) and an accuracy of ±0.2 ^{o}F (±0.1 ^{o}C).

8.5 The vapor pressure apparatus shall have a provision for the introduction of the test specimen into the evacuated or to be evacuated test chamber and for the cleaning or purging of the chamber following the test.

8.6 If a vacuum pump is used, it must be capable of reducing the pressure in the test chamber to less than 0.01 psia (0.007 kPa). If the apparatus uses a piston to induce a vacuum in the sample chamber the residual pressure shall be no greater than 0.01 psia (0.07 kPa) upon full expansion of the test chamber devoid of any material at 100 ^{o}F ±0.2 ^{o}F (37.8 ^{o}C ±0.1 ^{o}C).

8.7 Iced water bath for chilling samples to temperatures between 32 to 40^{o}F (0 to 4.5 ^{o}C).

8.8 Mercury barometer 0 to 17.4 psia (0 to 120 kPa) range or calibrated digital barometer.

8.9 McLeod vacuum gauge, to cover at least the range of 0 to 5.0 mm Hg (0 to 0.67 kPa).

8.10 NVFEL approved fume hood.

8.11 Lab Coat, Safety glasses

8.12 Traveling forms for samples being analyzed.

9. Reagents and Materials

Use chemicals of at least 99% purity for quality control standards, unless otherwise indicated.

9.1 n-pentane (pure grade or commercial grade-95% pure)

9.2 2,2,4-trimethylpentane ("iso-octane")

9.3 2,2-dimethylbutane ("neohexane")

9.4 3-methylpentane

9.5 acetone

9.6 Process control gasoline is test fuel, which is used for routine quality control measurements. The limits for these materials are established by multiple sample analyses of the fuel.

10. Sampling

10.1 The extreme sensitivity of vapor pressure measurements to losses through evaporation and the resulting changes in composition is such as to require the utmost precaution

10.2 The minimum size of the sample container from which the vapor pressure sample is taken is 4 ounces (118 ml). It will be 70 to 85% filled with sample.

10.3 In the case of referee testing, the 1 L (1 qt) sample container is mandatory.

10.4 Protect samples from excessive temperatures prior to testing. This can be accomplished by storage in an appropriate ice bath or refrigerator.

11. Calibration

Pressure Transducer Calibration.

11.1 Check the calibration of the pressure measurement device daily or until the stability of the device is documented as having less than or equal to 0.03 psi (0.2 kPa) drift per unit of the appropriate calibration period. When calibration is necessary follow the procedures in sections 11.2 through 11.6.

11.2 Apply vacuum to the test chamber through the drain port. When the McLeod gauge measures less than 0.8 mm Hg (0.1 kPa) adjust the pressure measurement deviceís zero control to match to within ±0.01 psi (0.7 kPa) of the McLeod Gauge.

11.3 Set the zero by placing the cursor under "*Z" and pressing the "Task" key.

11.4 Open the test chamber to the atmosphere by removing the vacuum source from the drain port. Observe the pressure reading to the right of "p=".

11.5 Adjust the reading to match a temperature and latitude corrected mercury or digital barometer within ±0.01 psi (0.7 kPa)

11.6 Alter the lower digits of "Gain" (those to the right of it) with the cursor arrows and save the calibration by pressing the "Task" key on the instrument twice.

11.7 Repeat Steps 11.2 to 11.6 until the instrument zero and barometer readings read correctly without further adjustments.

Temperature Calibration

11.8 Every six months, a temperature block can be used for this calibration, or use a slurry mix of de-ionized water and ice in a flask. Insert the NIST thermometer and the instrument RTD to a depth of at least 2 inches. Engage the temperature calibration mode on the instrument by placing the cursor over the "Measure" asterisk and selecting the "Up" arrow and "Run" key simultaneously.

11.9 To engage the temperature calibration settings move the cursor to the left most "0" on the screen and change the "0" to "1" with the "Up" arrow.

11.10 Adjust the zero setting to match the thermometer when the temperature has stabilized on both the thermometer and the RTD by using the arrow keys with the cursor to the right of "Zero=". Set the zero by placing the cursor over "*Z" and pressing the "Task" key.

11.11 Use a temperature block or fill a second flask with water that is within 50 to 70 ∝C. Insert the NIST thermometer and the instrument RTD to a depth of at least 2 inches.

11.12 Adjust the reading to the right of "T=" to match the thermometer by altering the lower digits of "Gain" with the cursor arrows. Save the calibration by pressing the "Task" key twice. Repeat 11.8 to 11.12 until the instrument and the NIST thermometer(s) agree.

12. Analytical Procedure

12.1 Samples and standards are chilled, air saturated and analyzed in batches. Reagent and process control gasoline must be handled the same as samples. Chill adequate quantities of standards to provide for an initial analysis of 2,2-dimethylbutane, and analysis of a reagent standard listed in Section 9 or a process control gasoline after every 20 samples, and a final analysis of a reagent standard listed in Step 9.

12.2 The ice-water bath is a slurry of crushed ice and water at 32 to 40 ∝F. Allow sufficient time for the slurry to reach this temperature. Verify the sample temperature by direct measurement of the temperature of a similar liquid in a similar container placed in the cooling bath at the same time as the sample. The bathís depth must be such that the surface of the slurry is at or above the surface of the sample in the container.

12.3 Turn on the computer (if it is off) that is located across from the vapor pressure hood in the volatility lab.

12.4 Open the Filemaker Pro program, then click on, "open an existing file," and highlight Micron (D:), open RVP folder, and then "NVFEL 125 Instrument Data Base, " see Attachment A.

12.5 Append a new record in the file and enter the analystís initials, the instrument number, and its calibration date into the database. The database automatically enters the current date and time.

12.6 Read the Mercury or Digital Barometer, enter that value in the corresponding column. Verify the Grabner pressure transducer accuracy.

12.7 Select "Measure" on the instrument with the "Task" key. Read the pressure to the right of "p=" on the Grabnerís screen and enter it in the column labeled "Grabner Barometer Reading" in the database. The database automatically converts the mercury barometer reading to psia, subtracts it from the Grabnerís barometer reading and displays the results in the column labeled "Grabner-Mercury".

The absolute difference must not exceed 0.030 psia. If it does, the transducer must be calibrated as described in Section 11.

12.8 Verify that the Vapor Pressure equation in the instrumentís software is:

Certification Test Fuel, ASTM Formula
(RVPE or DVPE) psi = (0.965 * Ptot) ñ 0.548
(D323 equivalent)

California Phase II Fuel, California Air Resource Board Formula
(RVPE or DVPE) psi = (0.972 * Ptot) ñ 0.715

Other Fuels, EPA Formula
(RVPE OR DVPE) psi =(0.956*Ptot) ñ 0.347

Display the equation by moving the cursor to the "RVPE" or "DVPE" asterisk and pressing "Task". If the equation is different, use the cursor keys to alter the values.

12.9 Once the equation is correct, move the cursor to the "<-" arrow and press the "Task" key. Enter "Yes" in the database in the column labeled "Vapor Pressure Equation OK?" Some Grabner models display "DVPE" instead of "RVPE", either is acceptable.

12.10 Open the file named "NVFEL 125 Analysis Data Base," see Attachment B. The input format will automatically come up on the screen. The database has a number of built in data checks, which will appear at the bottom of the record when unusual, or out of tolerance values are detected.

12.11 Check the sample thermometer in the ice-water bath. It must be within 32 to 40 ºF to proceed with the sample inspection and air saturation. Check that there is an adequate amount of ice to maintain temperature.

12.12 Remove a chilled sample container from the ice water bath.

12.13 Append a new record in the database, enter the sample ID, the enforcement standard, and the analystís initials.

12.14 Enter "Yes" to the right of "Temp ok?" indicating that the sample temperature is within 32 to 40 ºF.

12.15 Inspect the sample container for leaks. Discoloration of any seals placed over the cap indicates a leak. If there is discoloration or other evidence of a leak, enter "Yes" to the right of "Leaked?" in the database. If no leak is evident, enter "No".

12.16 If the sample is in a glass container, inspect it for phase separation and clarity. If a sample is phase separated, enter "Yes" to the right of "Phase Sepíd?" in the database. If it is not phase separated, enter "No". If a sample is cloudy, enter "Yes" to the right of "Cloudy?" in the database. If it is not cloudy, enter "No".

12.17 On the first air saturation, remove the sample container cap and measure the sample volume with a depth gauge suitable for the specific container. The gauge must identify 70, 80, and 85 percent of the container capacity.

If the sample volume is less than 70 percent, enter "Yes" to the right of "<70%?" in the database. If the sample volume is 70 percent or more, enter "No."

If the sample volume is greater than 85 percent, enter "Yes" to the right of ">85%?" in the database. If the sample volume is 85 percent or less, enter "No".

If the volume is less than 80 percent, do not adjust the sample volume. Enter "NA" to the right of "Adjust <70%?"

If the sample volume is greater than 80 percent, pour out enough sample to bring the container contents within the 70-80 percent range. Under no circumstances may any sample which has been poured out, be returned to the container.

12.18 Measure the sample volume again. If the sample volume is less than 70 percent, enter "Yes" to the right of "Adjust <70%?" in the database.

If the sample volume is 70 percent or more, enter "No."

12.19 Tightly close the container after the sample volume inspection, shake it vigorously. Return it to the ice-water bath.

12.20 Record the time of the sample's return to the bath to the right of "Sat 1" in the database. Use the <ctrl> and < ; > keys to automatically enter the current time from the computer's clock.

12.21 After entering the saturation time for the first sample of the day, select the "find" command and specify the current date in the date field. This step limits the active data set to the current day's entries and resets the analysis count to indicate the number of samples run on each analyzer for the current day only.

12.22 After at least 2 minutes in the ice-water bath, remove the container, and then open it momentarily.

12.23 Tightly close the container, shake it vigorously, and return it to the ice-water bath. Record the time the sample is returned to the bath. Use the <ctrl> and < ; > keys to automatically enter the current time from the computer's clock.

12.24 Repeat Step 12.22 one more time, but record the final saturation time to the right of "Sat 3" in the database.

12.25 A duplicate must be performed at least once per day on each instrument used.

For this procedure, a duplicate is defined as an additional instrument analysis of a sample that has been previously chilled and air saturated. The additional analysis is performed without repeating the air saturation process but with the saturated sample at 32 to 40 ∝F.

12.26 After a minimum of 2 minutes has elapsed since the third air saturation, remove the chilled sample container from the ice-water bath.

12.27 Uncap the container, insert the transfer tube, press the <Run> key, then record the analysis time (use the <ctrl> and < ; > keys) and instrument number in the database. The analysis time is defined as the time when the <Run> key is pressed.

12.28 When the Grabner display indicates "temp adjust," remove the transfer tube and place the end of the tube under the instrument's carrying handle.

12.29 Close the sample container tightly with its cap and return it to the ice-water bath.

After approximately 8 minutes, the instrument will display Ptot, Pgas, Pabs, and "RVPE" or "DVPE." The indicated "RVPE" or "DVPE" is the RVP for the sample. Enter the Ptot, Pgas, and RVP values into the database. The database automatically calculates the Pabs value from Ptot and Pgas.

If the RVP of the sample exceeds the applicable enforcement standard, the sample must be analyzed as a duplicate. If the Pgas reading does not fall within 0.50-1.00 psia, analyze the sample as a duplicate.

12.30 Samples in metal containers must be examined for clarity and phase separation after each vapor pressure analysis is performed. Shake the chilled container vigorously to

thoroughly mix the sample and immediately pour approximately 20 percent of the sample volume into a clear glass container.

12.31 Observe the sample in the glass container for clarity and phase separation.

If the sample is phase separated, enter "Yes" to the right of "Phase Separated?" in the database. If it is not phase separated, enter "No."

If a sample is cloudy, enter "Yes" to the right of "Cloudy?" in the database. If it is not cloudy, enter "No." Discard the sample in the glass container.

13. Calculations & Reporting

13.1 When the last unknown sample is analyzed, measure the vapor pressure of one of the reagent standards listed in Section 9. Select the "NVFEL 125 Report" layout, see Attachment C. Print the day's analysis results from the NVFEL Instrument Data Base.

13.2 Examine the NVFEL 125 Report for completeness and accuracy.

13.3 Transcribe the RVP results and applicable comments onto the corresponding traveling Form. Initial the form, writing as closely as possible to the actual data entry. Verify that no transcription errors are in the data entered on traveling Form.

13.4 The NVFEL 125 Instrument Data Base automatically flags the operator when:
the instrument calibration is more than 6 months old
the instrument calibration date is a future date
the mercury barometer reading exceeds the normal 28.7 to 30.0 inHg range
the mercury and Grabner barometer readings differ by more than 0.03 psi, or
the T(measure) or vapor pressure equation status is "No"

The analyst checks and corrects all data entries while the Grabner still displays the test results.

13.5 The NVFEL 125 Analysis Data Base automatically flags the operator when:
the daily instrument verification is missing or deficient
the time between air saturation is less than 2 minutes
the time between analysis and the third air saturation is less than 2 minutes
the RVP entered is not within 0.02 psi of the value calculated from the entered Ptot
the Pgas reading exceeds the 0.50 to 1.00 psi range
the entered RVP exceeds the enforcement standard
the record is missing a required data entry

The analyst checks and corrects all data entries while the Grabner still displays the test results. The analyst reviews the NVFEL 125 Report and traveling form for accuracy and to confirm compliance with the acceptance criteria in Section 14.

13.6 If the results are OK, click on the "Scripts" pull-down menu header and select "1 find today"

13.7 If not finding reports with "todayís" date, the message "No records match this request" will appear. Put the cursor in the "Analysis Date" field and select all the contents. Type in the date you are requesting and click on the "Continue" button on the left side of the screen.

13.8 Make sure that the print dialog box reads "records being browsed" and then click on the "OKí button. This will print out a report.

13.9 Click on the "Records" pull-down menu, and select "show all records."

13.10 Click on the "File" pull-down menu and select "Export records".

13.11 In the "Export records to file" dialog box, use the pull-down menu and locate "Micron(D:), Access" folder. Double-click on it to open it.

13.12 Type "RVP.dbf" (no quote marks) and click on the "Save" button.

13.13 The "Specify field order for export" dialog box will appear. Click on the "Export" button.

13.14 Open up the "Start Fuel Test App." and click on the "Data Detail" button.

13.15 In the "Test" list, find "RVP" and double click on it. This will open the RVP table.

13.16 Click on the "Import RVP" button at the top. This imports the data from the RVP.dbf file.

13.17 When this is complete, click on "OK."

13.12 Click on the "Export to Results" button and press on the "NO" button. This will only send new data and not the entire file.

14. Performance Criteria

14.1 The instrument is calibrated every 6 months.

14.2 The pressure transducer is verified before the first analysis of the day and must be within 0.03 psia of a latitude and temperature corrected mercury or digital barometer.

14.3 Instrument settings are verified before each use. The test temperature setting of the Grabner must be 100 °F.

14.4 The RVP equation must be:

Certification Test Fuel, ASTM Formula
(RVPE or DVPE) psi = (0.965 * Ptot) ñ 0.548
(D323 equivalent)

California Phase II Fuel, California Air Resource Board Formula
(RVPE or DVPE) psi = (0.972 * Ptot) ñ 0.715

Other Fuels, EPA Formula
(RVPE OR DVPE) psi =(0.956*Ptot) ñ 0.347

14.5 The sample temperature must be within 32 to 40 ºF when the container is first opened.

14.6 Samples are visually inspected.

14.7 Pgas values are monitored for every analysis, if not within 0.50 to 1.00 psia , a duplicate must be performed on the sample.

14.8 Air saturation and the time between the last air saturation and analysis must be a minimum of 2 minutes.

14.9 The first analysis of the day on each instrument used must be the reagent standard 2,2-dimethylbutane.

14.10 Every subsequent 20 analyses on each instrument must be followed by the measurement of either a reagent standard or control gasoline listed below.

Compound	Lower control limit	Upper control limit
n-pentane	16.20 psia	16.40 psia
2,2,4-trimethylpentane	2.39 psia	3.03 psia
2,2-dimethylbutane	10.64 psia	10.93 psia
3-methylpentane	6.86 psia	7.26 psia
acetone	7.97 psia	8.12 psia

14.11 The last analysis of the day must be one of the reagent standards listed in Section 9. Duplicates are performed on all samples found to exceed the applicable enforcement standard identified for each sample on the Fuels Field Inspection form and on at least one sample per day per instrument used.

14.12 The computerized database program has automated data checks incorporated.

Attachment A
NVFEL 125 Instrument Data Base Input Screen

Grabner Daily Verification

Date	Time	Analyst	Instrument Number	Calibration Date	Mercury Barometer in Hg	Grabner Barometer Reading psia	Grabner-Mercury psia	T(measure) = 100°F	Vapor Pressure Equation OK?
8/20/93	15:51	CAS	201-269	8/20/93	28.96	14.21	-0.01	Yes	Yes
8/23/93	08:18	CAS	201-269	8/20/93	29.06	14.29	0.02	Yes	Yes
8/23/93	10:04	CAS	201-206	7/9/93	29.06	14.25	-0.02	Yes	Yes
8/24/93	07:33	CAS	201-206	7/9/93	28.98	14.23	0.00	Yes	Yes
8/24/93	07:34	CAS	201-269	8/20/93	28.98	14.24	0.01	Yes	Yes
8/25/93	11:05	JBK	201-206	7/9/93	29.21	14.36	0.02	Yes	Yes
8/25/93	11:11	JBK	201-269	8/20/93	29.21	14.36	0.02	Yes	Yes
8/26/93	07:10	CAS	201-206	7/9/93	29.30	14.39	0.00	Yes	Yes
8/26/93	07:11	CAS	201-269	8/20/93	29.30	14.39	0.00	Yes	Yes
8/27/93	08:12	CAS	201-269	8/20/93	29.15	14.31	0.00	Yes	Yes
8/27/93	08:13	CAS	201-210	8/17/93	29.15	14.29	-0.02	Yes	Yes
8/30/93	07:09	CAS	201-210	8/17/93	29.11	14.27	-0.02	Yes	Yes
8/30/93	07:10	CAS	201-269	8/20/93	29.11	14.30	0.01	Yes	Yes

Attachment B
NVFEL 125 Analysis Data Base Input Screen

Sample ID **Unleaded Regular Gasoline** Enf Std NA Analyst CAS Analysis Date 12/8/93

Sample Condition		Times		Instr No.	Test Results	
Temp OK?	Yes	Sat 1	15:02:47	201-206	Ptot	16.27
Leaked?	No	Sat 2	15:31:56		Pgas	0.84
Phase Sep'd?	No	Sat 3	15:34:20		Pabs	15.43
Cloudy?	No	Analysis	17:04:01		RVP	15.20
< 70 %?	No	Comments				
> 85 %?	No					
Adjust < 70 %?	NA					

Instrument Number	**196**	**206**	**210**	**256**	**257**	**259**	**260**	**261**	**262**	**269**	**270**
Analysis Count	0	1	0	0	0	0	0	0	0	0	0

Attachment C
NVFEL 125 Report

NVFEL 125 Report

Sample ID **control** — Enforcement Std NA
Date 9/12/2002 — Instrument Number 210-145 — Analyst NST

				Test Results	
Temp OK?	Yes	Sat 1	8:49:19 AM	Ptot	10.75
Leaked?	No	Sat 2	8:54:48 AM	Pgas	.81
Phase Separated?	No	Sat 3	8:57:55 AM	Pabs	9.94
Cloudy?	No	Analysis	9:04:24 AM	RVP	9.92
< 70 % ?	No				
> 85 % ?	No	Comment:			
Adjust < 70 % ?	No				

Sample ID **sample 1** — Enforcement Std NA
Date 9/12/2002 — Instrument Number 210-145 — Analyst NST

				Test Results	
Temp OK?	Yes	Sat 1	8:49:19 AM	Ptot	9.65
Leaked?	No	Sat 2	8:54:48 AM	Pgas	.64
Phase Separated?	No	Sat 3	8:57:55 AM	Pabs	9.01
Cloudy?	No	Analysis	9:17:19 AM	RVP	8.88
< 70 % ?	No				
> 85 % ?	No	Comment:			
Adjust < 70 % ?	No				

Sample ID **sample 2** — Enforcement Std NA
Date 9/12/2002 — Instrument Number 210-145 — Analyst NST

				Test Results	
Temp OK?	Yes	Sat 1	8:49:19 AM	Ptot	7.75
Leaked?	No	Sat 2	8:54:48 AM	Pgas	.73
Phase Separated?	No	Sat 3	8:57:55 AM	Pabs	7.02
Cloudy?	No	Analysis	10:28:38 AM	RVP	7.06
< 70 % ?	No				
> 85 % ?	No	Comment:			
Adjust < 70 % ?	No				

Sample ID **control** — Enforcement Std NA
Date 9/12/2002 — Instrument Number 210-145 — Analyst NST

				Test Results	
Temp OK?	Yes	Sat 1	8:49:19 AM	Ptot	16.30
Leaked?	No	Sat 2	8:54:48 AM	Pgas	.70
Phase Separated?	No	Sat 3	8:57:55 AM	Pabs	15.60
Cloudy?	No	Analysis	10:39:55AM	RVP	15.24
< 70 % ?	No				
> 85 % ?	No	Comment:			
Adjust < 70 % ?	No				

I have performed the steps in accordance with the requirements of Test Method 125

Analyst's Signature _____ Date _____